Amendments to the Claims:

The following listing of claims replaces all prior listings and versions of claims in this application.

Claims 1 to 54. (Cancelled)

55. (Currently Amended) A digital optical memory device comprising:

(a) a digital optical memory medium comprising a plurality of layers of a luminescent material for an optical digital memory device, each of said plurality of layers comprising insoluble microparticles dispersed in a water soluble polymer, said microparticles having a particle size less than 0.2 microns, said microparticles having a sorbed luminescent dye, said insoluble microparticles comprising silver microparticles and insoluble metal salts, said silver microparticles being a product of oxidation of silver ~~by an oxidizer selected from the group consiting of~~ ~~$K_3[Fe(CN)_6]$, $(NH_4)_2S_2O_8$, $KMnO_4$, $CuCl_2$, $FeCl_3$ and quinones, and said oxidation being carried out in a presence of anions selected from the group consisting of SCN^-, CN^-, $Cr_2O_7^{2-}$, WO_4^{2-}, $[FeCN)_6]^{-3}$, oxalate, citrate and anions of 1-phenyl-5-mercaptotetrazole, 2-mercapto-bezothiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole and organic mercapto compounds~~; and

(b) [[means for]] <u>a two-laser system for two photon</u> writing data in digital form on said digital optical memory medium.

56. (Previously Presented) A digital optical memory device comprising:

(a) a digital optical memory medium comprising a plurality of layers of a luminescent material for an optical digital memory device, each of said plurality of layers comprising insoluble microparticles dispersed in a water soluble polymer, said microparticles having a particle size less than 0.2 microns, said microparticles having a sorbed luminescent dye, said insoluble microparticles comprising silver microparticles and insoluble metal salts, said silver microparticles being a product of oxidation of silver by an oxidizer selected from the group consisting of $K_3[Fe(CN)_6]$, $(NH_4)_2S_2O_8$, $KMnO_4$, $CuCl_2$, $FeCl_3$ and quinones, and said oxidation being carried out in a presence of anions selected from the group consisting of SCN^-, CN^-, $Cr_2O_7^{2-}$, WO_4^{2-}, $[FeCN)_6]^{-3}$, oxalate, citrate and anions of 1-phenyl-5-

mercaptotetrazole, 2-mercapto-bezothiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole and organic mercapto compounds; and

(b) a two-laser system for two photon writing data in digital form on said digital optical memory medium.

57. (Previously Presented) The memory device of claim 56, wherein the two-laser system comprises means for two-photon writing of the data in a three dimensional optical matrix in said digital optical memory medium.

58. (Currently Amended) [[A]] The [[digital optical]] memory device of claim 56 wherein ~~comprising:~~

~~(a) a digital optical memory medium comprising a plurality of layers of a luminescent material for an optical digital memory device, each of said plurality of layers comprising insoluble microparticles dispersed in a water soluble polymer, said microparticles having a particle size less than 0.2 microns, said microparticles having a sorbed luminescent dye, said insoluble microparticles comprising silver microparticles and insoluble metal salts, said silver microparticles being a product of oxidation of silver by an oxidizer selected from the group consisting of $K_3[Fe(CN)_6]$, $(NH_4)_2S_2O_8$, $KMnO_4$, $CuCl_2$, $FeCl_3$ and quinones, and said oxidation being carried out in a presence of anions selected from the group consisting of SCN^-, CN^-, $Cr_2O_7^{2-}$, WO_4^{2-}, $[FeCN)_6]^{-3}$, oxalate, citrate and anions of 1-phenyl-5-mercaptotetrazole, 2-mercapto-bezothiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole and organic mercapto compounds,~~ at least one of said plurality of layers [[having]] has data stored in digital form therein; and

~~(b)~~ the device further comprises means for reading said data in said digital form from said digital optical memory medium.

59. (Currently Amended) A method of reading digital data comprising:

(a) providing a digital optical memory medium, the medium comprising a plurality of layers of a luminescent material for an optical digital memory device, each of said plurality of layers comprising insoluble microparticles dispersed in a water soluble polymer, said microparticles having a particle size less than 0.2 microns, said microparticles having a sorbed luminescent dye, said insoluble microparticles comprising silver microparticles and insoluble metal salts, said silver microparticles being a product of oxidation of silver ~~by an~~

~~oxidizer selected from the group consisting of $K_3[Fe(CN)_6]$, $(NH_4)_2S_2O_8$, $KMnO_4$, $CuCl_2$, $FeCl_3$ and quinones, and said oxidation being carried out in a presence of anions selected from the group consisting of SCN^-, CN^-, $Cr_2O_7^{2-}$, WO_4^{2-}, $[FeCN)_6]^{-3}$, oxalate, citrate and anions of 1-phenyl-5-mercaptotetrazole, 2-mercapto-bezothiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole and organic mercapto compounds~~, at least one of said plurality of layers having data stored in digital form therein <u>from a two-laser system for two photon writing of such data in digital form on said digital optical memory medium</u>; and

(b) reading said data in said digital form from said digital optical memory medium.

60. (Currently Amended) A method of [[forming]] <u>storing information on</u> a digital optical memory medium, the method comprising:

<u>forming a digital optical memory medium by:</u>

simultaneously extruding, from a multi-slit filler, thin layers of photographic emulsion and between them thick layers of silver halide free polymer to a substrate to form a multi-layer material;

exposing said multi-layer material to light;

developing and fixation of said multi-layer material to form silver particles from the exposed silver halide;

oxidation of the silver particles to form the insoluble salt particles ~~by an oxidizer selected from the group consisting of $K_3[Fe(CN)_6]$, $(NH_4)_2S_2O_8$, $KMnO_4$, $CuCl_2$, $FeCl_3$ and quinones, and said oxidation being carried out in a presence of anions selected from the group consisting of SCN^-, CN^-, $Cr_2O_7^{2-}$, WO_4^{2-}, $[FeCN)_6]^{-3}$, oxalate, citrate and anions of 1-phenyl-5-mercaptotetrazole, 2-mercapto-bezothiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole and organic mercapto compounds~~;

treating the multi-layer material with luminescing dye and allowing the luminescing dye to be sorbed onto the particles; and

writing data in digital form onto said medium <u>a two-laser system for two photon writing of such data in digital form on said digital optical memory medium</u>.

61. (New) A method of digitally storing information, the method comprising:

providing one or a plurality of layers comprising silver halide particles having a particle size less than about 0.2 microns;

exposing at least one layer to light using two laser beams at at least one predetermined point of the layer(s);

developing and fixation of said exposed layer(s) to form silver particles from the exposed silver halide;

oxidizing the silver particles to form insoluble salt particles; and

treating the layer(s) with luminescing dye and allowing the luminescing dye to be sorbed onto the particles.

62. (New) The method of claim 61, wherein the luminescent dye is selected from the group consisting of xanthene dyes, acridine dyes, oxazine dyes, indigo dyes, polycyclic vat dyes, benzanthrones in the form of sulfuric esters of leuco compounds, dyes form both luminescent and non-luminescent complexes with polyvalent metal ions, and cyanine dyes.

63. (New) The method of claim 60, wherein the luminescent dye is selected from the group consisting of xanthene dyes, acridine dyes, oxazine dyes, indigo dyes, polycyclic vat dyes, benzanthrones in the form of sulfuric esters of leuco compounds, dyes form both luminescent and non-luminescent complexes with polyvalent metal ions, and cyanine dyes.

64. (New) The method of claim 59, wherein the luminescent dye is selected from the group consisting of xanthene dyes, acridine dyes, oxazine dyes, indigo dyes, polycyclic vat dyes, benzanthrones in the form of sulfuric esters of leuco compounds, dyes form both luminescent and non-luminescent complexes with polyvalent metal ions, and cyanine dyes.

65. (New) The device of claim 55, wherein the luminescent dye is selected from the group consisting of xanthene dyes, acridine dyes, oxazine dyes, indigo dyes, polycyclic vat dyes, benzanthrones in the form of sulfuric esters of leuco compounds, dyes form both luminescent and non-luminescent complexes with polyvalent metal ions, and cyanine dyes.

66. (New) The device of claim 56, wherein the luminescent dye is selected from the group consisting of xanthene dyes, acridine dyes, oxazine dyes, indigo dyes, polycyclic vat dyes, benzanthrones in the form of sulfuric esters of leuco compounds, dyes form both luminescent and non-luminescent complexes with polyvalent metal ions, and cyanine dyes.

67. (New) The method of claim 61 wherein the microcrystals have a size of about 0.02 to 0.08 microns and wherein the water soluble polymer is selected from the group consisting of polyvinyl alcohol, polyvinyl pyrrolidone, gelatin, gelatin modified with polyvinyl alcohol, polyvinyl pyrrolidone, polyvinyl sulphate, carboxymethylcellulose, cellulose acetophthalate, phthaloylgelatine or graft polymers of gelatin with polymethoxydiethyleneglycol acrylate, polydiacetoneacrylamide or poly-N,N'-methylenediacrylamide, and mixtures thereof.

68. (New) The method of claim 60 wherein the microcrystals have a size of about 0.02 to 0.08 microns and wherein the water soluble polymer is selected from the group consisting of polyvinyl alcohol, polyvinyl pyrrolidone, gelatin, gelatin modified with polyvinyl alcohol, polyvinyl pyrrolidone, polyvinyl sulphate, carboxymethylcellulose, cellulose acetophthalate, phthaloylgelatine or graft polymers of gelatin with polymethoxydiethyleneglycol acrylate, polydiacetoneacrylamide or poly-N,N'-methylenediacrylamide, and mixtures thereof.

69. (New) The method of claim 59 wherein the microcrystals have a size of about 0.02 to 0.08 microns and wherein the water soluble polymer is selected from the group consisting of polyvinyl alcohol, polyvinyl pyrrolidone, gelatin, gelatin modified with polyvinyl alcohol, polyvinyl pyrrolidone, polyvinyl sulphate, carboxymethylcellulose, cellulose acetophthalate, phthaloylgelatine or graft polymers of gelatin with polymethoxydiethyleneglycol acrylate, polydiacetoneacrylamide or poly-N,N'-methylenediacrylamide, and mixtures thereof.

70. (New) The device of claim 55 wherein the microcrystals have a size of about 0.02 to 0.08 microns and wherein the water soluble polymer is selected from the group consisting of polyvinyl alcohol, polyvinyl pyrrolidone, gelatin, gelatin modified with polyvinyl alcohol, polyvinyl pyrrolidone, polyvinyl sulphate, carboxymethylcellulose, cellulose acetophthalate, phthaloylgelatine or graft polymers of gelatin with

polymethoxydiethyleneglycol acrylate, polydiacetoneacrylamide or poly-N,N'-methylenediacrylamide, and mixtures thereof.

71. (New) The device of claim 56 wherein the microcrystals have a size of about 0.02 to 0.08 microns and wherein the water soluble polymer is selected from the group consisting of polyvinyl alcohol, polyvinyl pyrrolidone, gelatin, gelatin modified with polyvinyl alcohol, polyvinyl pyrrolidone, polyvinyl sulphate, carboxymethylcellulose, cellulose acetophthalate, phthaloylgelatine or graft polymers of gelatin with polymethoxydiethyleneglycol acrylate, polydiacetoneacrylamide or poly-N,N'-methylenediacrylamide, and mixtures thereof.

72. (New) The method of claim 61, wherein the silver microparticles are oxidized by an oxidizer selected from the group consisting of $K_3[Fe(CN)_6]$, $(NH_4)_2S_2O_8$, $KMnO_4$, $CuCl_2$, $FeCl_3$ and quinones, and said oxidation being carried out in a presence of anions selected from the group consisting of SCN^-, CN^-, $Cr_2O_7^{2-}$, WO_4^{2-}-, $[FeCN)_6]^{-3}$, oxalate, citrate and anions of 1-phenyl-5-mercaptotetrazole, 2-mercapto-bezothiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole and organic mercapto compounds.

73. (New) The method of claim 60, wherein the silver microparticles are oxidized by an oxidizer selected from the group consisting of $K_3[Fe(CN)_6]$, $(NH_4)_2S_2O_8$, $KMnO_4$, $CuCl_2$, $FeCl_3$ and quinones, and said oxidation being carried out in a presence of anions selected from the group consisting of SCN^-, CN^-, $Cr_2O_7^{2-}$, WO_4^{2-}-, $[FeCN)_6]^{-3}$, oxalate, citrate and anions of 1-phenyl-5-mercaptotetrazole, 2-mercapto-bezothiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole and organic mercapto compounds.

74. (New) The method of claim 59, wherein the silver microparticles are oxidized by an oxidizer selected from the group consisting of $K_3[Fe(CN)_6]$, $(NH_4)_2S_2O_8$, $KMnO_4$, $CuCl_2$, $FeCl_3$ and quinones, and said oxidation being carried out in a presence of anions selected from the group consisting of SCN^-, CN^-, $Cr_2O_7^{2-}$, WO_4^{2-}-, $[FeCN)_6]^{-3}$, oxalate, citrate and anions of 1-phenyl-5-mercaptotetrazole, 2-mercapto-bezothiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole and organic mercapto compounds.

75. (New) The device of claim 55, wherein the silver microparticles are oxidized by an oxidizer selected from the group consisting of $K_3[Fe(CN)_6]$, $(NH_4)_2S_2O_8$, $KMnO_4$, $CuCl_2$, $FeCl_3$ and quinones, and said oxidation being carried out in a presence of anions selected from the group consisting of SCN^-, CN^-, $Cr_2O_7^{2-}$, WO_4^{2-}-, $[FeCN)_6]^{-3}$, oxalate, citrate and anions of 1-phenyl-5-mercaptotetrazole, 2-mercapto-bezothiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole and organic mercapto compounds.